MC issues for tau group

- **Issues:**
  - MC datasets
  - Tau polarization in MC
- **MC datasets**
  - **common datasets for the tau group**
    - **Don't want everybody to duplicate efforts, especially hit the same problems**
    - **Disk-space limited**
    - **Work needs to be redone as simulation/reconstruction progresses**
  - **will request disk space for tau group on FCDFSGI2**
    - **Fedor already requested**
  - **MC file size below 1GByte , Production file - 40% bigger**
  - **W -> tau nu**
  - **Z->tau tau, 5000 events, all decay channels, no acceptance cuts (primarily to understand acceptance effects)**
  - **Z -> tau tau, both tau's central, with Pt > 10 GeV**
    - **5000 events, both tau's decay hadronically**
    - **5000 events, one tau -> mu nu nu, one tau -> hadrons**
    - **5000 events, one tau -> e nu nu, one tau -> hadrons**
  - **Chi0(2)chi+(1) production (Pythia/MSUGRA):**
    - **2 sets of MSUGRA parameters : one just outside presently excluded region, another one – "conventional" point (M0=150, M(1/2)=150, A0=0, tan(beta) >> 1)**
  - **Need volunteers**

- Tau polarization
  - **Momentum distributions of tau daughters depend strongly on tau polarization**
  - **In Z(spin 1) and H (spin 0) decays spins of 2 tau's are correlated, thus even at the same mass the efficiencies are different**
  - **Need to study this effect**
- Step 1 (short term)
  - **TAUOLA can decay polarized taus**
  - **Need to tell it about tau polarization**
  - **Tania Moulik: CDF Run II interface to TAUOLA chooses tau polarization depending on the mother particle**
  - **tools are in place, need to validate**
- Step 2 (longer term)
  - **Vector bosons are produced polarized, polarization of the tau's depends on it**
  - **Presently neither of widely used event generators accounts for the polarization effects**
  - **problem is recognized by LHC collaborations**